

*ABSTRACT of the doctoral dissertation*

“MODEL OF SUPPORT FOR THE DECISION-MAKING PROCESS, WHILE ORGANIZING DREDGING WORKS IN THE HARBOURS”

Even small changes in the organization of maritime transport during harbour operation, could lead to disturbances and changes in the functioning of the terminals, as well as their logistic facilities.

The aim of the research was to create a decision-making model, which would be able to support planning, organizing and conducting the dredging works in the harbour area. The proposed solution is a multiple element system which enables to verify, in a comprehensive way, the majority of the aspects determining the quality and the time of dredging enterprise realization.

The dissertation presents an original approach to the decision-making process during the organization of dredging works.

In order to achieve a main goal of the study, the conditions of dredging works were considered. Furthermore, the factors which have an influence on the schedule of the project were evaluated and algorithms, and process organization schemes, were developed. If it is not enough, the decision models corresponding to the discussed issue were analyzed and the computer program was created. And last but not the least, the proposed project and equipment were verified using a simulation model. While creating this model, the method of multiple criteria AHP decision support was used. And moreover, the mass service model with the priority queue regulations, the expert study, and statistical analysis of the traffic flow, were provided. The simulation test takes advantage of the ECDIS navigational and maneuvering simulator.

The model was developed in reliance to multiple criteria studies, based on the opinions of multinational experts. These enabled to adjust each element of the system in accordance with various locations.

The implementation of the model was made on the basis of real data of the current project concerning dredging the approach fairway and inside waters of the Port of Gdynia. The results of modeling, achieved on the basis of real data, together with the proposition of original solutions, enables to exploit the most convenient available technology in the verified work scheme.

As a result of the research, the following thesis has been proven that detailed analysis of the conditions of dredging works and taking into account the received conclusions, enables to reduce the costs and shorten the time of dredging projects realizations.